

**F**oodborne diseases – also called food poisoning -- are illnesses caused by eating or drinking contaminated food. Researchers have identified more than 250 foodborne illnesses caused by bacteria, viruses, parasites, fungi, chemicals, or toxins in food products.<sup>1</sup> While many of these organisms live in and on our bodies -- often in harmless, even helpful ways – under certain conditions, they can cause life-threatening diseases.



According to the [Food and Drug Administration](#), about one in six Americans – or about 48 million people -- get food poisoning each year in the U.S.<sup>2</sup> These infections result in an estimated 128,000 hospitalizations and 3,000 deaths across the country each year.<sup>3</sup> In addition, the annual cost of all foodborne illnesses in this country is estimated to exceed \$17.6 billion in direct medical expenses and lost productivity.<sup>4</sup>

## Risk Factors for Foodborne Illnesses

Foodborne illness can affect anyone who eats contaminated food. However, certain groups, are more likely to get sick from contaminated food, such as:

- [pregnant women](#);
- [older adults](#);
- [young children](#); and
- [people with weakened immune systems](#).

## Symptoms of Foodborne Illnesses

People infected with food poisoning may have no symptoms to very severe symptoms that usually last from one to seven days. The most common symptoms of foodborne illnesses are:

- upset stomach;
- abdominal cramps;
- nausea;
- vomiting;
- diarrhea;
- fever;
- fatigue; and
- joint or backaches.

While most cases of food poisoning go away on their own within a few hours or days, see a health care provider if the following severe symptoms occur:

- bloody diarrhea;
- diarrhea that lasts more than three days;
- body temperature over 102 degrees;
- frequent vomiting that leads to dehydration; or
- dehydration resulting in little or no urination, a parched mouth, a dry throat, or feeling dizzy when standing.

In severe cases, foodborne illnesses can cause long-term health problems or even death. Serious infections without proper medical attention can lead to:

- chronic [arthritis](#);
- brain and nerve damage; or
- kidney failure.

## How Harmful Germs Get into Food



Food becomes contaminated in a variety of ways. Among the most common are:

### **Contamination of food by animal or human waste**

- It is normal to find bacteria in the intestines of healthy animals used for

food. Meat and poultry can become contaminated by small amounts of intestinal contents during slaughter.

- Fresh fruits and vegetables can get contaminated when water used for irrigation or washing has germs from animal manure or human sewage.

### **Lack of proper handwashing**

- Germs and trace amounts of intestinal contents can be introduced into food when food preparers do not properly wash their hands.

### **Transferring germs from one surface to another**

- Food, kitchen tools, and surfaces may become contaminated from raw food products.
- Germs can transfer from one food to another when the same knife, cutting board, or other utensils are not washed between uses (known as [cross-contamination](#)).
- A food that is fully cooked can become re-contaminated if it touches other raw foods or juices from raw food that contain germs.

### **Storing and cooking at the wrong temperatures**

- In general, refrigeration and freezing prevent bacteria from multiplying in large enough numbers to cause foodborne disease. Likewise, proper heating can kill most parasites, viruses, and bacteria. Always follow the guidelines for [safe minimum cooking temperatures](#) and [cold food storage](#) to kill germs that cause food poisoning.

## Preventing Foodborne Diseases

Most foodborne diseases are easy to avoid with these simple steps:

### Clean

Wash your hands often and always before touching food. To minimize the risk of food poisoning, always wash produce before eating or serving it. Keep knives, cutting boards, and kitchen surfaces clean. Wash them with hot, soapy water, or put items in the dishwasher. Use a disinfectant on counters after touching raw meat or poultry.

### Separate

Keep germs from raw meat from getting on fruits, vegetables, and other foods. Put cooked meat on a clean platter, not back on the one that held the raw meat.

### Cook

Thoroughly cook meat, chicken, fish, shellfish, and eggs.

### Chill

Eat cooked food promptly and refrigerate leftovers within two hours after cooking. Do not leave cut fruits and vegetables at room temperature for a long time.

### When in doubt, throw it out

If you aren't sure if a food is safe, don't eat it.



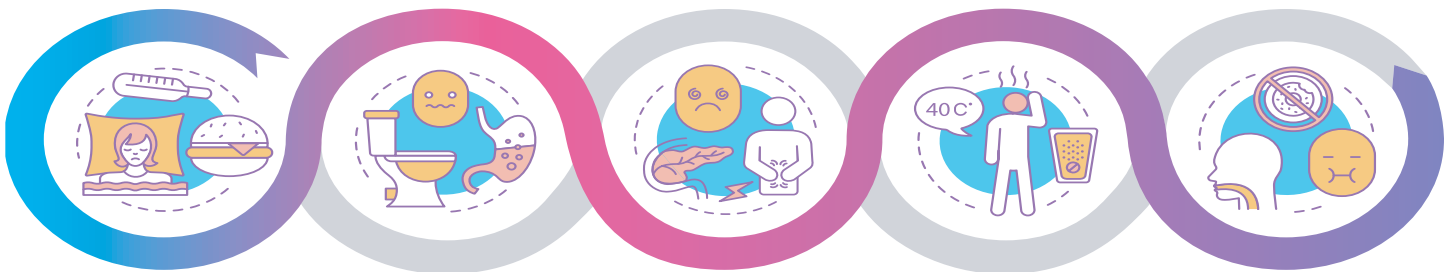
## Germs that Cause Food Poisoning

Some germs make people sick within a few hours after swallowing them. Others may take several days. Here are a few of the hundreds of germs that can cause foodborne diseases:

### Staph (*Staphylococcal aureus*)

- **What is Staph?**

*Staph* food poisoning is an intestinal illness caused by eating foods contaminated with toxins (poison) produced by the *Staphylococcus aureus* bacteria. About 25% of people and animals have *Staph* bacteria in the gut. The percentage is even higher if you include those with skin, eye, nose, or throat infections. Usually, *Staph* does not cause illness in healthy people. However, if the bacteria gets into the bloodstream, it can become severe, even fatal.



Food poisoning symptoms

Diarrhea

Cramps

Fever

Vomiting





## ***Vibrio (Vibriosis)***

- **What is *Vibrio* bacteria?**  
Vibrio bacteria live in certain coastal waters and are present in high concentrations between May and October. About a dozen *Vibrio* species cause a type of food poisoning called *Vibriosis*. Certain *Vibrio* species can also cause skin infections when an open wound is exposed to saltwater or brackish water.

- **Symptoms begin 30 minutes to eight hours after exposure.**

Symptoms of *Staph* may include nausea, vomiting, and stomach cramps. Most people also have diarrhea.

- **Common food sources:**

Handling uncooked foods, such as sliced meats, puddings, pastries, and sandwiches, are a common cause of *Staph* food poisoning.

- **Ways to prevent *Staph*:**

- o Do not keep food at an unsafe temperature for more than two hours.
- o Always use a food thermometer to ensure food cooks to a [safe minimum internal temperature](#).
- o Keep hot foods hot (140 degrees or hotter) and cold foods cold (40 degrees or colder).
- o Store cooked food in wide, shallow containers and refrigerate within two hours (or one hour if it is hotter than 90 degrees outside).

Brackish water is a mixture of fresh and saltwater often found where a river meets the sea.

- **Symptoms begin two to 48 hours after exposure.**

Symptoms of *Vibriosis* include watery diarrhea, nausea, stomach cramps, vomiting, fever, and chills.

- **Common food sources:**

Most people become infected with *Vibrio* bacteria by eating raw or undercooked shellfish, particularly [oysters](#).

- **Ways to prevent *Vibriosis*:**

- o Do not eat raw or undercooked oysters or other shellfish.
- o Wear protective gloves when handling raw seafood.
- o Wash hands with soap and water after handling raw shellfish.
- o Avoid cross-contaminating cooked shellfish with raw shellfish and their juices.



- o Stay out of saltwater or brackish water if you have a wound (including a recent surgery, piercing, or tattoo). Cover your wound with a waterproof bandage if it might come into contact with saltwater, brackish water, raw seafood, or raw seafood juices.

## ***C. perfringens (Clostridium perfringens)***

- **What is *C. perfringens*?**

*C. perfringens* is one of the most common causes of food poisoning.<sup>5</sup> It is a bacteria that, under unsafe temperature conditions, can grow and multiply on food. When swallowed, it produces a toxin that causes diarrhea.

- **Symptoms begin six to 24 hours after exposure.**

Diarrhea and stomach cramps usually begin suddenly with *C. perfringens* and last for less than 24 hours. Vomiting and fever are not common.

- **Common food sources:**

[Beef or poultry](#), especially large roasts, gravies, and dried or pre-cooked foods,

are common sources of *C. perfringens* contamination.

- **Ways to prevent *C. perfringens*:**

- o Cook food to a [safe temperature](#), especially beef roasts and whole poultry.
- o [Keep cooked food at 140 degrees or warmer or 40 degrees or colder](#) if it will not be served or eaten soon.
- o Refrigerate leftovers at 40 degrees or colder within two hours after cooking the food (or within one hour if the outside temperature is above 90 degrees).
- o Reheat leftovers to at least 165 degrees before serving.

## ***Salmonella (Salmonellosis)***

- **What is *Salmonella*?**

*Salmonella* is a common bacterial infection that affects the intestinal tract.

- **Symptoms begin six hours to six days after exposure.**

Symptoms may include diarrhea, fever, stomach cramps, and vomiting.



- **Common food sources:** Raw or undercooked [chicken](#), turkey, and meat; [eggs](#); [unpasteurized \(raw\) milk](#) and juice; and [raw fruits and vegetables](#) are common sources of contamination. Also, many [animals](#) carry *Salmonella*, including [backyard poultry](#), [reptiles and amphibians](#), and [rodents](#) (pocket pets).
- **Ways to prevent *Salmonella*:**
  - o Drink only pasteurized milk.

- o Cook poultry and eggs thoroughly. Cook poultry products to an internal temperature of 170 degrees for breast meat and 180 degrees for thigh meat.
- o Avoid foods containing raw eggs, such as homemade Caesar salad dressing, cookie dough, hollandaise sauce, or homemade eggnog.
- o Keep eggs refrigerated.
- o Throw away cracked or dirty eggs.
- o Use soap and hot water to wash all food preparation surfaces and utensils that come in contact with raw poultry or raw eggs.
- o Wash hands immediately after handling raw poultry, raw eggs, reptiles, or animal feces (intestinal matter).

## Norovirus

- **What is Norovirus?**  
*Norovirus* is a contagious virus and the leading cause of foodborne illness.<sup>6</sup> It is often called a “stomach flu” or a “stomach bug.” However, it is not related to the flu, which is caused by the influenza virus.
- **Symptoms begin 12 to 48 hours after exposure.**  
 Symptoms include diarrhea, nausea, stomach pain, and vomiting.
- **Common food sources:**  
[Leafy greens](#), [fresh fruits](#), [shellfish \(such as oysters\)](#), or unsafe water can carry *Norovirus*. *Norovirus* is also spread by an infected person or by touching surfaces that have the virus on them.
- **Ways to prevent Norovirus:**
  - o Wash hands often.
  - o Rinse fruits and vegetables.

- o Cook shellfish thoroughly.
- o Stay home when sick and for two days after symptoms stop.
- o Avoid preparing food for others while sick and for two days after symptoms stop.

## Botulism (*Clostridium botulinum*)

- **What is Botulism?**

*Botulism* is a rare but serious illness caused by bacteria that can create a toxin that attacks the body’s nerves. This toxin can cause difficulty breathing, muscle paralysis, and even death. This toxin can produce *Botulism* not only in food but in wounds and the intestines of infants.

*Botulism* is found naturally in many places but rarely makes people sick. However, the bacteria spores can grow in certain conditions and make one of the most lethal toxins known.<sup>7</sup>

- **Symptoms begin 18 to 36 hours after exposure.**  
 Symptoms may include double or blurred vision, drooping eyelids, slurred speech, difficulty swallowing and breathing, dry mouth, muscle weakness, and paralysis. Symptoms start in the head and move down as the illness worsens.
- **Common food sources:**  
 Improperly [canned](#) or [fermented foods](#) and [homemade alcohol](#) are common sources of contamination. Cases of foodborne *Botulism* often come from home-canned foods with a low acid content, such as asparagus, green beans, beets, and corn. However, infection outbreaks have also come from more unusual sources such as chili peppers, tomatoes, and improperly handled baked potatoes wrapped in aluminum foil.





water are common sources of contamination.

- **Ways to prevent *Campylobacteriosis*:**

- o Wash hands before preparing food and immediately after handling raw poultry or other meat.
- o Thoroughly wash with soap and hot water all food preparation surfaces and utensils that come in contact with raw meat.

- **Ways to prevent Botulism:**

- o Follow strict hygiene steps when home canning.
- o Refrigerate oils with garlic or herbs.
- o Keep foil-covered baked potatoes wrapped and hot until served or refrigerate them.
- o Consider boiling home-canned food before eating it to kill any bacteria in the food.

- o Cook poultry products to an internal temperature of 170 degrees for breast meat and 180 degrees for thigh meat.
- o Drink pasteurized milk and chlorinated or boiled water.
- o Wash hands after handling pet feces.

## ***Campylobacter (Campylobacteriosis)***

- **What is *Campylobacter*?**

*Campylobacter* is a bacteria that can cause a type of food poisoning known as *Campylobacteriosis*. It is the most common bacterial cause of diarrhea illness in the United States.<sup>8</sup>

- **Symptoms begin two to five days after exposure.**

Symptoms include diarrhea (often bloody), stomach cramps, stomach pain, and fever.

- **Common food sources:**

[Raw or undercooked poultry](#), [raw \(unpasteurized\) milk](#), and contaminated

## ***E. coli (Escherichia coli)***

- **What is *E. coli*?**

*Escherichia coli* (abbreviated as *E. coli*) are bacteria that typically live in the intestines. This large and diverse group of bacteria play an important role in a healthy human intestinal tract. However, a few strains cause serious health complications if not properly managed.

- **Symptoms begin three to four days after exposure.**

Symptoms include severe stomach cramps, diarrhea (often bloody), and vomiting. Around 5–10% of people diagnosed with *E. coli* may develop kidney failure.<sup>9</sup> However, most people recover within a week without medications.

- **Common food sources:**  
Raw or undercooked ground beef, raw (unpasteurized) milk and juice, [raw vegetables](#) (such as [lettuce](#)), [raw sprouts](#), and unsafe water are common sources of contamination.
- **Ways to prevent *E. coli*:**
  - o Eat only thoroughly cooked beef and beef products.
  - o Cook ground beef patties to an internal temperature of 160 degrees.
  - o Avoid unpasteurized juices.
  - o Drink only pasteurized milk.
  - o Wash fresh fruits and vegetables thoroughly before eating raw or cooking.

### ***Cyclosporiasis (Cyclospora Infection)***

- **What is *Cyclosporiasis*?**  
*Cyclosporiasis* is an intestinal illness caused by the microscopic parasite *Cyclospora*. People can become infected with *Cyclospora* by consuming food or water contaminated with the parasite. People living or traveling in countries where *Cyclosporiasis* is common are at increased risk for infection.
- **Symptoms begin one week after exposure.**  
Symptoms include watery diarrhea, loss of appetite, weight loss, stomach cramps, bloating, increased gas, nausea, and fatigue.
- **Common food sources:**  
*Cyclospora* infection is caused by people ingesting something – such as food or water –contaminated with feces. [Raw fruits or vegetables](#) and herbs are common sources of contamination. It typically needs at least one-to-two weeks after being passed in a bowel movement to become infectious to

another person. Therefore, it is unlikely that *Cyclospora* is passed directly from one person to another.

- **Ways to prevent *Cyclospora*:**

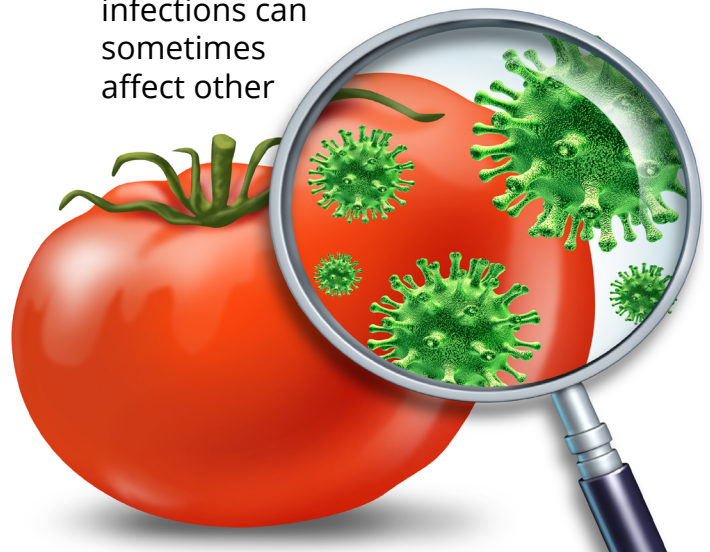
- o Avoid food or water with possible contamination from human or animal waste.

### ***Listeria (Listeriosis)***

- **What is Listeriosis?**

*Listeriosis* is a serious infection caused by the germ *Listeria*, a bacteria found in soil, water, and some animals, including cattle and poultry. People can become ill with *Listeriosis* after eating contaminated food. However, it primarily affects [pregnant women and newborns](#), [older adults](#), and [people with weakened immunity](#). *Listeriosis* is usually a mild illness for pregnant women. However, it may cause severe disease in the fetus or newborn baby.

Some people with *Listeria* infections, most commonly adults 65 years and older and people with weakened immune systems, can develop severe infections of the bloodstream (causing [sepsis](#)) or brain (causing [meningitis](#) or [encephalitis](#)). In addition, *Listeria* infections can sometimes affect other





parts of the body, including bones, joints, and sites in the chest and abdomen.

- **Symptoms begin one to four weeks after exposure.** In pregnant women, *Listeria* symptoms usually include fever and other flu-like signs, such as fatigue and muscle aches. Infections during pregnancy can lead to serious illness or even death in newborns. [Other people](#) (most often older adults) may have symptoms that include a headache, stiff neck, confusion, loss of balance, and convulsions along with fever and muscle aches.
- **Common food sources:** [Queso fresco and other soft cheeses](#), [raw sprouts](#), [melons](#), [hot dogs](#), [pâtés](#), [deli meats](#), [smoked seafood](#), and [raw \(unpasteurized\) milk](#) are common sources of contamination.
- **Ways to prevent *Listeria*:** High-risk people should:
  - o Avoid eating soft cheese, such as queso fresco, queso blanco, panela, brie, Camembert, blue-veined, or feta, unless it is labeled as made with pasteurized milk.
  - o Do not eat raw sprouts (including alfalfa, clover, radish, and mung bean sprouts) and thoroughly cook all sprouts to kill harmful bacteria.
  - o Keep cut melon refrigerated at 41 degrees or colder for no more than seven days. Throw away cut melon left at room temperature if left for more than four hours.
  - o Avoid eating hot dogs, lunch meats, cold cuts, deli meats (such



as bologna), or fermented or dry sausages unless heated to an internal temperature of 165 degrees or until steaming hot just before serving.

- o Do not eat refrigerated pâté or meat spreads from a deli or meat counter or the refrigerated section of a store. Meat spreads and pâté that do not need refrigeration before opening, such as products in cans, jars, or sealed pouches, are a safer choice. Always refrigerate these foods after opening.
- o Only eat canned, [shelf-stable](#) cold-smoked fish or cold-smoked fish cooked in a dish, such as a casserole.
- o Consume only pasteurized milk and milk products, including soft cheese, ice cream, and yogurt.
- o Keep milk and milk products refrigerated at 40 degrees or colder.

## ***Shigella* (Shigellosis or Bacillary Dysentery)**

- **What is Shigellosis?** *Shigella* bacteria cause the disease, *Shigellosis*, most often caused by swallowing food or water contaminated

with human or animal waste. *Shigella* spreads easily. Only a small number of bacteria can make someone ill. People with a *Shigella* infection can spread the disease to others for several weeks after their symptoms end.

- **Symptoms begin one to two days after contact with the germ.**

Symptoms of *Shigella* include diarrhea (sometimes bloody), fever, stomach pain, and feeling the need to have a bowel movement even when the bowels are empty. Symptoms usually last five to seven days, but some people may experience symptoms up to four weeks or more. In some cases, it may take several months before bowel habits (frequency and consistency) are entirely normal.

- **Common food sources:**

Eating food that was prepared by someone who is sick with *Shigellosis* can spread the disease. Foods that are consumed raw are more likely to be contaminated with *Shigella* germs.

- **Ways to prevent *Shigella* infection:**

- o Avoid swallowing water from ponds, lakes, or untreated swimming pools possibly contaminated with human or animal waste.
- o Carefully wash hands with soap and water before eating or preparing food for others, after changing a diaper, or using the restroom.
- o Follow [travelers' safe food and water guidelines](#) when traveling internationally.

## Hepatitis A

- **What is Hepatitis A?**

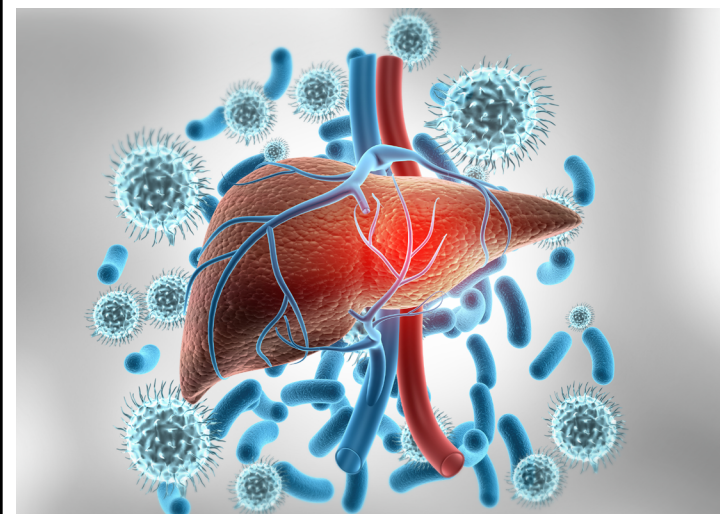
Hepatitis A is an infection of the liver caused by the Hepatitis A virus (HAV).

It is highly contagious. However, it is the only common foodborne disease preventable by vaccine. HAV is one of five hepatitis viruses that can infect the liver. While Hepatitis B and C can turn into chronic hepatitis, HAV generally does not, although it can lead to liver failure and death.

HAV is a contagious disease that travels in feces. It can spread from person to person or in food or water. In cases of contaminated food, it is usually the person preparing the food who contaminates it. The food handler may not know they have the virus since it is most likely passed on in the first two weeks of illness before a person begins to show symptoms.

- **Symptoms usually appear around 28 days after infection but can start as early as two weeks after catching the virus.**

Early symptoms of HAV include muscle aches, headache, loss of appetite, abdominal discomfort, fever, weakness, and fatigue. After a few days of experiencing these symptoms, 70% of patients develop jaundice, a yellowing of the skin, eyes, and mucous membranes. Jaundice also causes dark urine and light, clay-colored feces.<sup>10</sup>





- **Common food sources:**

Although [foodborne illnesses caused by HAV](#) are not common in the United States, water, shellfish, frozen produce, and salads are the most common food sources.

- **Ways to prevent HAV:**

- Get vaccinated. Two vaccine doses are needed for long-term protection, but a single dose of vaccine can prevent infection during an outbreak.
- Wash hands thoroughly with soap and warm water after using the bathroom, changing a diaper, or before preparing food.
- Wash hands with warm water and soap for at least 20 seconds before and after handling raw foods.
- Wash the inside walls and shelves of the refrigerator, cutting boards, countertops, and utensils that may have contacted contaminated foods.

For more information on food safety, download any of the free publications from:

- [Texas Department of Insurance, Division of Workers' Compensation](#);
- [U.S. Food & Drug Administration](#); or
- [Occupational Safety and Health Administration](#).

## References

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